

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

### **Listing of Claims:**

Claim 1 (Currently Amended): A method for ~~the calculation~~ calculating and back-solving of complex relationships in a ~~sub-cube of a multidimensional database-planning data repository~~ system comprising the steps of:

a) generating a sub-cube from the planning data repository system using a Calculation Engine, said planning data repository system residing separately from the Calculation Engine;

b) ~~[[a)]]~~ inputting from a user for at least one specified cell within the sub-cube, a required value, or ~~[[the]]~~ a required value and one or more constraints, the required value and the constraints being taken into account by the Calculation Engine in calculations;

c) ~~[[b)]]~~ where more than one calculation may affect a cell within the sub-cube, selecting a calculation for the affected cell in accordance with a set of prioritisation rules;

d) ~~[[c)]]~~ creating one or more parent/child tables giving the relationships and dependencies between one or more target cells and other cells in the sub-cube, using the Calculation Engine;

e) ~~[[d)]]~~ determining from the one or more parent/child tables the one or more target cells, each requiring a back-solving calculation to set a value of the specified cell to the required value;

f) ~~[[e)]]~~ for each target cell:

i) performing the back-solving calculation for the target cell using the Calculation Engine and recording that a change has taken place;

ii) remembering the one or more parent cells of the target cell to ensure they are recalculated;

iii) recalculating the value for each remembered parent cell using the Calculation Engine and recording that a change has taken place;

iv) repeating the i) performing, ii) remembering, and iii) recalculating steps until all changes to the target cells and their parent cells are complete;

- v) repeating the i) performing, ii) remembering, iii) recalculating, and iv) first repeating steps until no changes are recorded; and
- g) [[f)] reporting the results of the foregoing steps to the user.

Claim 2 (Currently Amended): The method of claim 1 wherein the parent/child table creating step d) [[c)] is carried out as part of the performing the back-solving calculation step i), thereby reducing a number of access times to access a particular cell in smaller, less complex sub-cubes.

Claim 3 (Currently Amended): A system for calculating and back-solving complex relationships in a ~~sub-cube of a multidimensional database~~ planning data repository system comprising:

a) means for generating a sub-cube from the planning data repository system using a Calculation Engine, said planning data repository system residing separately from the Calculation Engine;

b) [[a)] means for inputting from a user for at least one specified cell within the sub-cube, a required value, or a [[the]] required value and one or more constraints, the required value and the constraints being taken into account by the Calculation Engine in calculations;

c) [[b)] means for selecting a calculation for an affected cell within the sub-cube in accordance with a set of prioritisation rules;

d) [[c)] means for creating one or more parent/child tables giving the relationships and dependencies between one or more target cells and other cells in the sub-cube, using the Calculation Engine;

e) [[d)] means for determining from the one or more parent/child tables the one or more target cells, each target cell requiring a back-solving calculation to set a value of the specified cell to the required value;

f) [[e)] means for implementing the back-solving calculation for each target cell, including:

- i) means for performing the back-solving calculation for the target cell using the Calculation Engine and recording that a change has taken place;

ii) means for remembering the one or more parent cells of said target cell to ensure they are recalculated;

iii) means for recalculating the value for each remembered parent cell using the Calculation Engine and recording that a change has taken place; and

g) [[h))] means for reporting the results of the foregoing means to the user.

Claim 4 (Currently Amended)      A computer program product for calculating and back-solving complex relationships in a ~~sub-cube of a multidimensional database~~ planning data repository system the computer program product comprising a computer-readable storage medium having computer-readable program code means embodied in it, said computer readable program code means comprising::

a) computer readable program code means for generating a sub-cube from the planning data repository system using a Calculation Engine, said planning data repository system residing separately from the Calculation Engine;

b) [[a))] computer readable program code means for inputting from a user for at least one specified cell within the sub-cube, a required value, or a [[the]] required value and one or more constraints, the required value and the constraints being taken into account by the Calculation Engine in calculations;

c) [[b))] computer readable program code means for selecting a calculation for an affected cell within the sub-cube in accordance with a set of prioritisation rules;

d) [[c))] computer readable program code means for creating one or more parent/child tables giving the relationships and dependencies between one or more target cells and other cells in the sub-cube, using the Calculation Engine;

e) [[d))] computer readable program code means for determining from the one or more parent/child tables the one or more target cells each target cell requiring a back-solving calculation to set a value of the specified cell to the required value;

f) [[e))] computer readable program code means for implementing the back-solving calculation for each target cell, including:

- i) computer readable program code means for performing the back-solving calculation for the target cell using the Calculation Engine and recording that a change has taken place;
  - ii) computer readable program code means for remembering the one or more parent cells of said target cell to ensure they are recalculated;
  - iii) computer readable program code means for recalculating the value for each remembered parent cell using the Calculation Engine and recording that a change has taken place; and
- g) [[f]] computer readable program code means for reporting the results of the foregoing means to the user.

Claim 5 (Currently Amended):      The method of claim 1 wherein the step c) [[b]] includes the step of accepting from a user an adjustment to the prioritisation rules.

Claim 6 (Currently Amended):      The method of claim 1 including after step c) [[b]] the step of:

c1) [[b1]] checking the sub cube for consistency.